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Occurrence of a Caudivagant Mechanism in Salamanders

HOBART M. SMITH*

The description by Stebbins (1947, p. 1-5) of the use of the tail-tip by *Hydromantes* as an aid to locomotion could be nearly duplicated for *Pseudoeurycea cephalica rubrimembris* of Hidalgo and *P. galeanae* of Nuevo Leon, Mexico. Taylor and Smith (1945, p. 540-541) describe the movement of these as follows. "This form [*P. c. rubrimembris*] has a very peculiar mode of locomotion, which was also observed in *B. galeanae*. The tip of the tail is narrowed and somewhat attenuated and is differently colored from the remainder of the tail. The tip of the tail and perhaps the coloration appear to be linked with a special locomotor adaptation. As the animal moves forward in normal, unmolested walking, the tail is held straight back except for the terminal half inch or so, which is flipped forward with each step made by one particular leg. Upon being swung forward into position, the tip is placed on the ground, and then by straightening and pivoting on the tip the tail pushes the body forward as another step is taken. Unfortunately we did not observe whether the pushing movement of the tail is synchronized with one of the forelegs or with one of the hindlegs, but we suspect with the former, since the forelegs are somewhat weaker than the hindlegs."

Stebbins shows that the synchronization of push in *Hydromantes* is of tail with foreleg. His observations support our belief that such is the synchronization in *P. c. rubrimembris* and *P. galeanae*.

The occurrence of this "caudivagant mechanism" in genera as remotely related as *Hydromantes* and *Pseudoeurycea* is of considerable interest. Recognition of adaptive convergence is inescapable. The Mexican forms involved are, like *Hydromantes*, inhabitants of rocky, rather barren, rugged mountains.

The restricted occurrence of the mechanism is surprising. Many *P. c. cephalica* have been observed in life, but no sign of such caudal activity has been noted. Yet the relationship between *P. c. cephalica*, *P. c. rubrimembris*

*Department of Zoology, University of Illinois, Urbana.

and *P. galeanae* is very close. *P. c. cephalica* is, however, like practically all other Mexican plethodontids, usually found in more heavily forested areas where the humus may well be expected to afford better footholds than may be generally available in the somewhat barren areas occupied by *P. c. rubrimembris* and *P. galeanae*.

LITERATURE CITED

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